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REDESCRIPTION AND ASSIGNMENT TO THE NEW GENUS *LIRCEOLUS* OF THE TEXAS TROGLOBITIC WATER SLATER, *ASELLUS SMITHII* (ULRICH) (CRUSTACEA: ISOPODA: ASELLIDAE)

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In September, 1899, Dr. C. H. Eigenmann of Indiana University visited San Marcos, Texas, for 3 days in an attempt to obtain living specimens of the cave salamander, *Eurycea rathbuni* (Stejneger) from the artesian well of the U.S. Fish Commission. No salamanders emerged from the well during Eigenmann's visit, but he collected a number of subterranean mollusks and arthropods, including "the front half of a new species of *Caesidotea* [sic!]" (Eigenmann, 1900). In his list of species, Eigenmann (1900) referred to this isopod as "*Caecidotaea smithii* n. sp.", a nomen nudem, since no other information was given. Two years later Ulrich (1902) published descriptions of the new species of crustaceans listed by Eigenmann, including *Caecidotea smithii.* Since no additional specimens of this isopod had been obtained, the description of *C. smithii* was based on Eigenmann's incomplete specimen, which lacked the telson and uropods as well as the ends of the 2nd antennae.

Until now Ulrich's brief description and crude illustrations have been the only primary account of *C. smithii.* Other references to this species, given in the synonymy below, are based on Ulrich's account and add nothing new. No additional specimens have been reported on, as far as we know.

Beginning in December 1973, one of us (Longley) has been sampling the San Marcos artesian well regularly by means of

nets attached to the outlet of the pipe. The numerous specimens of *Caecidotea smithii* obtained have enabled us to redescribe and illustrate it in detail. Because of its unsuspected distinctive features, we have found it necessary to propose a new genus for this interesting troglobitic isopod. A representative series of specimens has been deposited in the National Museum of Natural History, Smithsonian Institution.

Lirceolus new genus

Diagnosis: Small, blind, unpigmented. Head without lateral incisions. Mandibular palp well developed. Maxilla 1 outer lobe with apical spines (10) inserted on distomedial shoulder, separated by wide gap from much longer circumplumose seta at distolateral corner and naked seta near distal end of posterior surface; inner lobe with 8 plumose apical setae. Maxilliped with slender palp segments having sparse setation. Pereopods 1 and 4 similar in ♂ and ♀. ♂ pleopod 2 with small basal spur; labial spur and catch lobe absent. Pleopod 2 exopod with oblique suture as in *Lirceus*. Pleopods 4 and 5, exopod and endopod fused into single fleshy ramus.

Type-species: *Caecidotea smithii* Ulrich.

Etymology: *Lirceus*, a spring in Greece (according to Rafinesque, 1820), + the Latin diminutive suffix "-olus", referring to the resemblance to *Lirceus* and the small size of the new genus. Gender masculine.

Lirceolus smithii (Ulrich)
Figures 1–26

Caecidotaea smithii Eigenmann, 1900: 302 [nomen nudem].

Caecidotea smithii Ulrich, 1902: 93, pl. 16, figs. 10–18 [fig. 14 missing].—Banta, 1907: 77.—Chappuis, 1927: 61.—Van Name, 1936: 472–473, fig. 297.—Jeannel, 1943: 261.—Nicholas, 1960: 132.

Caecidotea smithsii Ulrich.—Richardson, 1905: 438–439, fig. 496. [lapsus].—Creaser, 1931: 6.—Miller, 1933: 103.

Conasellus smithii (Ulrich).—Birstein, 1951: 53.—Henry and Magniez, 1970: 356 [in list].—Mitchell and Reddell, 1971: 55.

Asellus smithii (Ulrich).—Chace, Mackin, Hubricht, Banner, and Hobbs, 1959: 875.—Reddell, 1965: 158; 1970: 396.—Reddell and Mitchell, 1969: 8. Steeves, 1968: 183.—Fleming, 1973: 294 [in list].

[non] *Asellus smithii* (Ulrich)?—Dearolf, 1953: 227 [vide Reddell, 1970].

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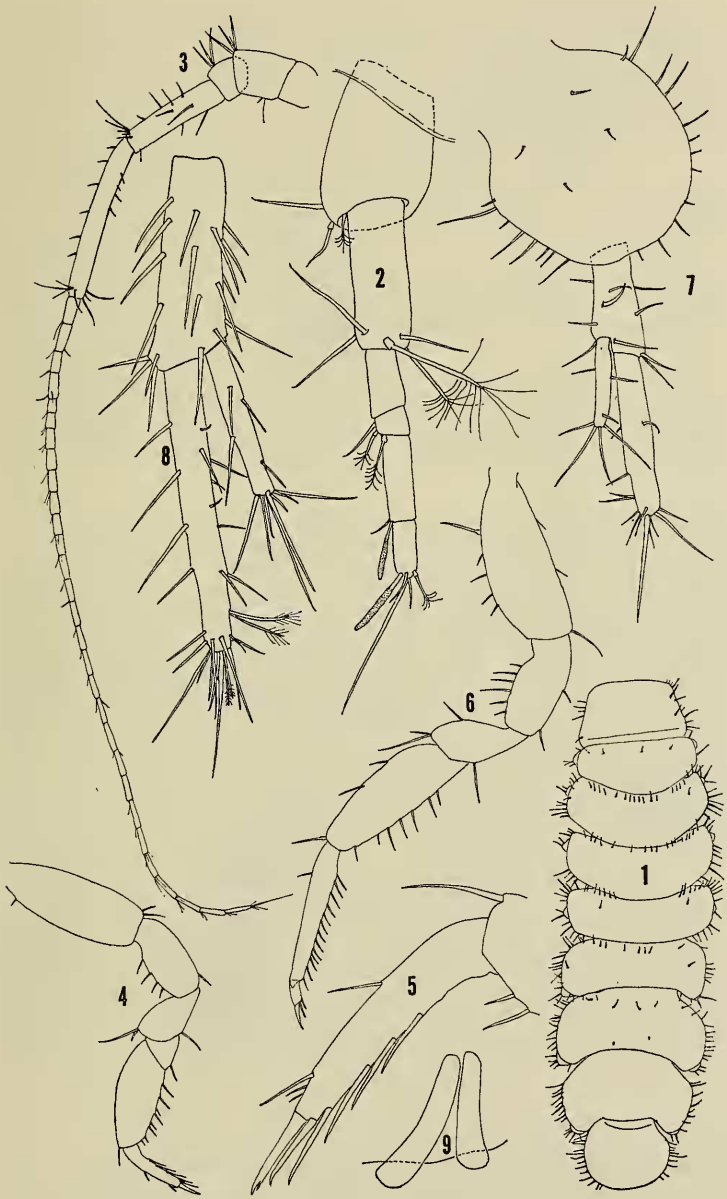
Figs. 1–9. *Lirceolus smithii*. 1, ♂ body, dorsal; 2, Antenna 1, 1.8 mm ♀, dorsal; 3, Antenna 2, 3.3 mm ♀, dorsal; 4, Left pereopod 1; 5, Dactyl of same; 6, Left pereopod 2; 7, Telson and uropod, dorsal, of 1.8 mm ♀; 8, Right uropod, dorsal, of 3.7 mm ♀; 9, Penes.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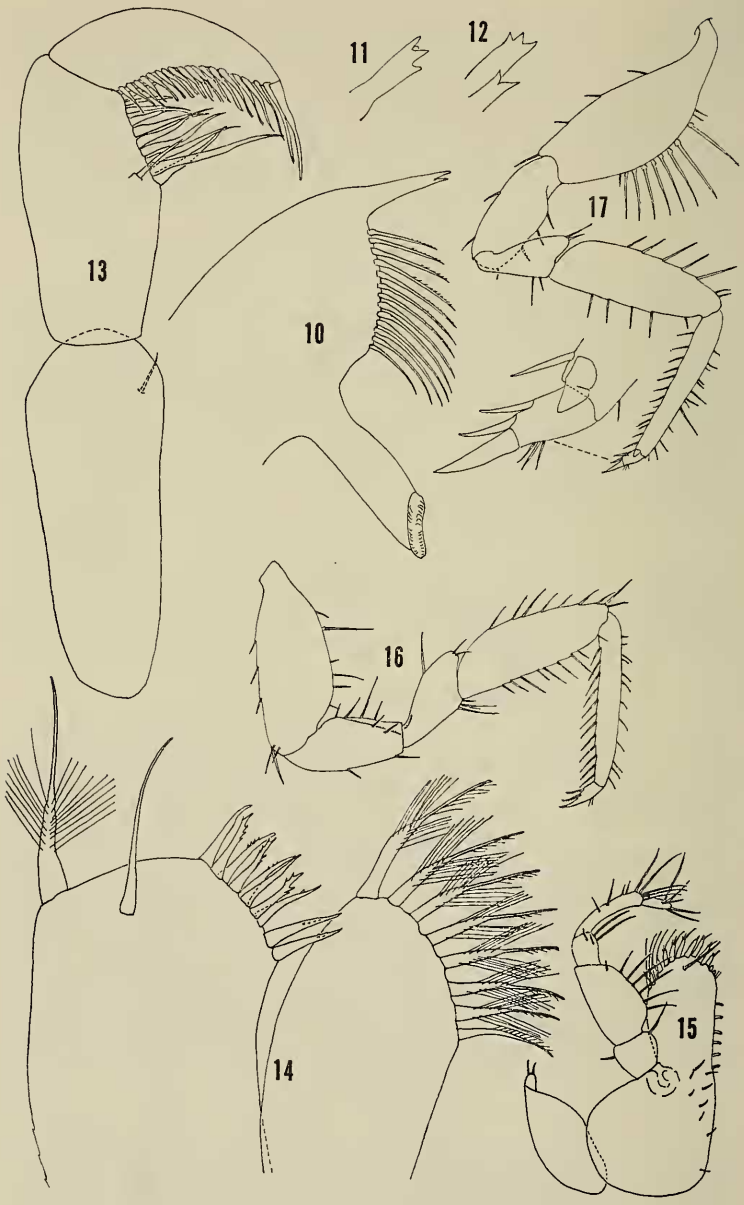
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Description: Length up to at least 3.7 mm. Body slender, about 3½ times as long as wide; width increasing gradually posteriorly to pereonite 6, then decreasing. Coxae all visible in dorsal view. Margins of head, pereonites, and telson moderately setose. Head nearly twice as wide as long; anterior margin nearly straight, without rostrum; postmandibular lobes weakly developed. Telson unusually small, orbicular; width and length subequal; caudomedial lobe barely evident.

Antenna 1 slightly longer than head; flagellum of 2–4 segments, last 2 segments at each bearing esthete. Antenna 2 about as long as body; flagellum of about 30 segments.

Mandible with 3-cuspate incisors and 2-cuspate lacinia mobilis; spine row with 13 spines on each mandible; palp with unusually long 1st segment and compact spination on 3rd segment. Maxilla 1 and maxilliped as in generic diagnosis and illustrations.

Pereopod 1 propus not enlarged; palm without processes; flexor margin of dactyl with 5–6 long slender spines. Pereopods 2–7 similar; basis with distinctive bulbous-based setae on margin; carpus and propus with long slender spines on 1 or both margins; dactyl with 2 spines on flexor margin.

♂ pleopod 1 larger than pleopod 2; protopod slightly shorter than exopod, with 5 retinaculae; exopod oval, slightly less than twice as long as wide, with a few short naked setae on distal margin. ♂ pleopod 2 exopod, proximal segment produced distomedially over anterior surface of distal segment; distal segment with longitudinal furrow on posterior surface. Endopod slender, about 3.6 times as long as wide; margins parallel distal to short medial and lateral spurs at base; fissure oblique; medial process running obliquely laterad and ending in knob extending slightly beyond broadly rounded caudal process. ♀ pleopod 2 suboval, slightly more than half as wide as long; margins without setae. Pleopod 3 exopod with margins unarmed except for 2 setae at distomedial corner. Pleopods 4–5 uniramous; groove encircling margin indicates line of fusion of rami. Uropod with narrow linear rami bearing long setae; endopod about 1.8 times as long as exopod.

Relationship: The oblique suture on the exopod of pleopod 3 is a distinctive character which *Lirceolus* shares only with *Lirceus*, and suggests that *Lirceus* may be ancestral to *Lirceolus* or that the 2 genera share a common ancestor. The structure of maxilla 1 is unique; all known Asellidae have a maxilla 1 inner lobe with either 4 apical setae (*Asellus* (*Asellus*)) or 5 apical setae (all other Asellidae). The finding of 8 setae on *L. smithii* was so unexpected that the maxilla 1 of several speci-

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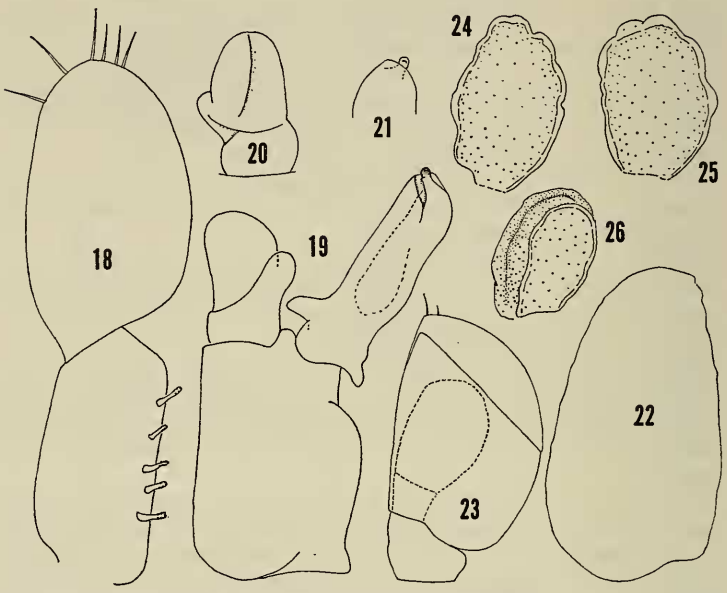
FIGS. 10–17. *Lirceolus smithii*. 10, Right mandible, gnathal margin; 11, Incisor of right mandible; 12, Incisor and lacinia of left mandible; 13, Mandibular palp; 14, Right maxilla 1; 15, Right maxilliped; 16, ♀ pereopod 4; 17, ♀ pereopod 6.



Figs. 18–26. *Lirceolus smithii*. 18, ♂ pleopod 1, anterior; 19, ♂ pleopod 2, anterior; 20, ♂ pleopod 2 exopod, posterior; 21, ♂ pleopod 2, endopod tip, posterior; 22, ♀ pleopod 2; 23, ♂ pleopod 3, anterior; 24, ♀ pleopod 4; 25, ♀ pleopod 5; 26, ♀ pleopod 5, tilted to show line of fusion between rami.

mens was examined in order to be sure that this number is constant. The position of the spines of the outer lobe of maxilla 1 is also unusual; in other Asellidae they are terminal rather than on an oblique subterminal shoulder.

The extreme reduction of pleopods 4 and 5 is known in no other Asellidae, but these pleopods have not been described in most species. The small size of *L. smithii*, together with the well known low metabolism of troglobites, suggests that this species requires minimal respiratory surface.

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